

KLINOV, I.Ya.; FABRIKANT, T.L.

Carbon tiles for the lining of digesters in the sulfite
pulp industry. Trudy MIKIM 28:221-227 '64.

(MIRA 19:1)

An intense light source for photographic purposes.
V. A. Faldutskii and A. M. Shernov. J. Tech. Phys.
(U. S. S. R.) 6, 601-6 (1934).—A flash lamp consisting of
Alkal in an atm. of O and giving 400,000 candle power
is described. Alkal. of 2% Mn raises this to 500,000
candle power. The duration of the flash is, resp., 0.02
to 0.04 and 0.01 to 0.02 sec. P. H. Rothmann

1013
OPTICAL INVESTIGATION OF THE DISCHARGE IN
METALLIC VAPOURS. 1. THE RELATION BETWEEN
THE CONCENTRATION OF EXCITED ATOMS AND THE
CURRENT INTENSITY IN A HIGH PRESSURE MERCURY
DISCHARGE. (Optische Untersuchung Der Entladung in
Metalldampfen I Die Abhängigkeit Der Konzentration
Angeregter Atome Von Der Stromstärke In Der

Hochdruckquecksilberentladung. V. A. Fabrikant and
[V. I. L. Pulver. Translated from *Fizika* 2, 506 (1961) 6,
521-56 (1964). 11p. (TIB/T4132A)

The absorption and intensity of visible lines in a high-
pressure discharge were measured, with constant concen-
tration of the Hg vapor, for various current intensities
using Hg-A lamps with oxide cathodes. Constant absorp-
tion and linear increase in the intensity of the visible triplet
with increasing current intensity were established. The
results showed that the concentrations of atoms at the levels
 3^1P_1 , 3^1P_1 , and 3^1P_2 are related to each other in the propor-
tion 100 to 144 to 120 and remain constant for variations in
the current intensity from 5 to 7.5 amp. (J.A.G.)

So

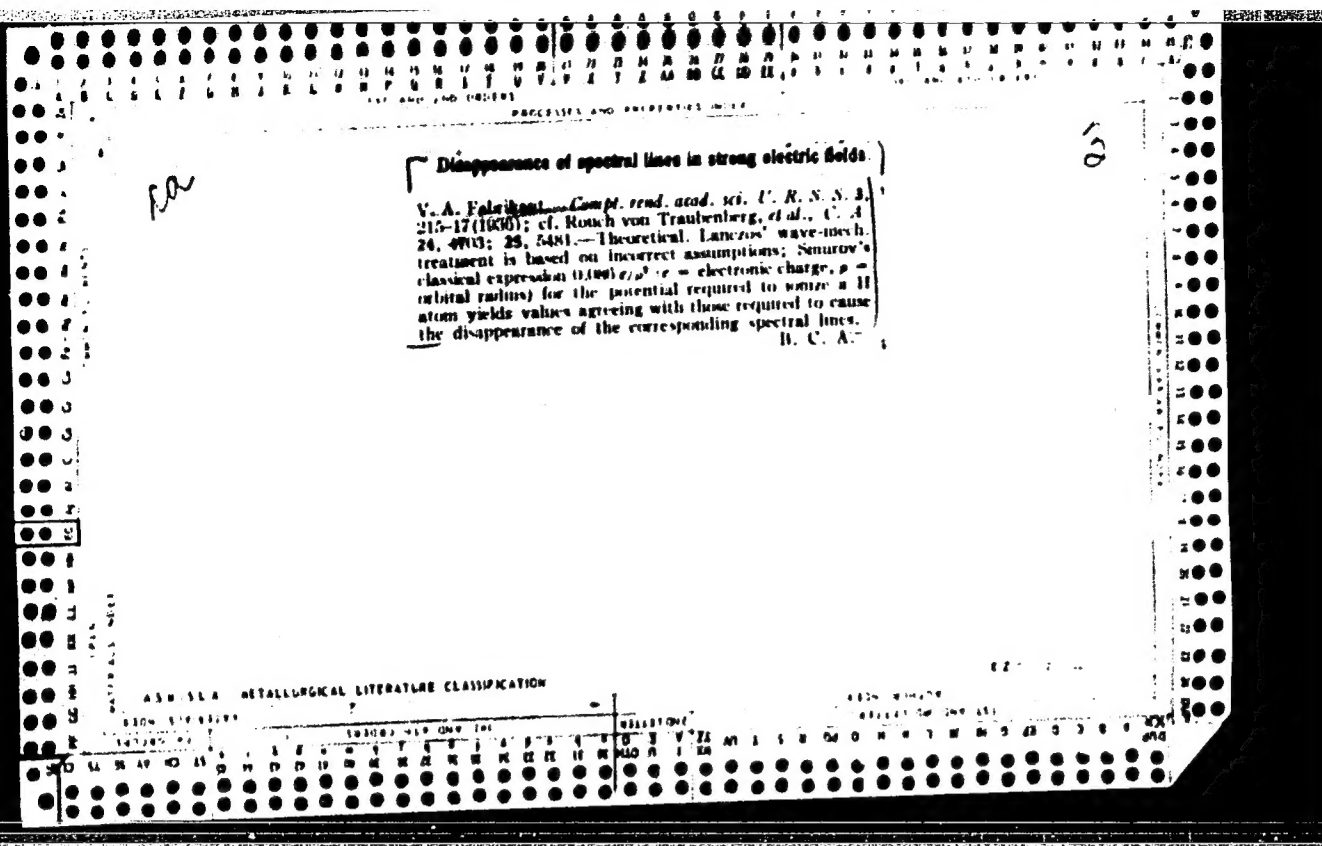
306. Pressure Effect on Discharge Radiation in Cadmium Vapour. W. A. Pabstmann and A. E. Kamel. *Comptes Rendus (Doklady) de l'Acad. des Sciences, U.S.S.R.* 2. 8. pp. 237-238, 1938. In German.—The intensity of the visible radiation from an electrically heated Cd vapour discharge tube with oxide cathode is measured with a copper-oxide photo-cell and also with a visual spectrophotometer, the Cd vapour pressure being varied, and the current being kept constant at 3-6A. The photo-cell is affected entirely by Cd $\lambda\lambda$ 8088, 4900 and 4476, and the visual instrument is used for Cd λ 6438. The results are similar to those of Kraft and Eisenberg for Hg (see Abstract 2645 (1934)), but more distinct, possibly owing to better experimental conditions. As the Cd vapour pressure is raised the intensity increases rapidly at first, reaches a maximum at about 0.1 mm. Hg, falls rapidly to a minimum at about 1 mm., and then increases again when the column begins to contract. The intensity pressure curve near the minimum varies from line to line. Addition of an indifferent gas causes flattening of the curve, and if the gas pressure is high enough the minimum disappears completely. A is more effective than Na, presumably on account of its greater effective diameter. W. J.

1794. Pressure Effect on Discharge Radiation in Mercury Vapor. V. Fubini, F. Benajon and J. Chry. *Comptes Rendus (Doklady) de l'Acad. des Sciences, U.S.S.R.*, 4, 4-5, pp. 183-184, 1958. In German.—The non-detection of a minimum in the intensity of radiation from Hg discharges as pressure is gradually increased is discussed in relation to effects of addition of an indifferent gas, such as were observed in Cd (see Abstract 806 (1958)). In Hg + A the intensity in the visible in Cd (see Abstract 806 (1958)). In Hg + A the intensity in the visible a region first remains constant and then falls off rapidly; in Hg + Ne a minimum occurs which is sharpest with very little Ne; and as in the case of Cd, A is more effective than Ne. In Hg, as in Cd, there must be considerable reabsorption of the visible triplets in a low-pressure discharge. This is verified by absorption measurements by a mirror—or autocollimation—method for Hg discharges at 10^{-4} mm. The absorption of $\lambda 4368$ exceeds that of $\lambda 4044$, which exceeds that of $\lambda 4480$, 8770 and ($> 66\%$) exceeds those in a high-pressure discharge, and explain the deviations of the observed intensity ratios of the visible Hg triplets in low-pressure discharges from the ratios given by the intensity rules. W. J.

4768. Optical Properties of Mercury-Vapour Lamps. W. Fabrikant, *Ch. Zvezd. 1949-50, Astronichesk. Techn. Phys., U.S.S.R. 3, 8 pp. 688-694, 1950, 14 refs.* Employing a stroboscopic method it is shown that the intensity of the lines 5770 and 5790 Å varies through a much wider range during an a.c. cycle than does the intensity of the visible triplet as shown by the lines 5461 and 4368 Å. The light distribution curve of the former lines also has a wider shape than that for the visible triplet, this result agreeing well with the results of absorption measurements. The method used also shows a new phenomenon, that of the variation of the shape of the light distribution curves during a cycle, the variation of the curve for the line 5461 Å being greater than for the lines 5770 and 5790 Å.

R. C. F.

ALU 114 METALLURGICAL LITERATURE CLASSIFICATION



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a-1

Discharge radiation in vapours of metals.
V. A. FARMANOV (Dokl. Akad. Nauk S.S.S.R., 1964,
641-643). The pressure-intensity radiation curves
for discharges through Hg, Cd, and Zn vapours are
of the same general type, and exhibit minima, the
depth of which varies on the thermal conductivity of
the vapours; the minima become less marked in
presence of inert gases. The curves are interpreted
on the basis of reabsorption, and of variations in the
no. of collisions between atoms and electrons and in
the efficiency of these collisions. R. T.

ASB-15A METALLURGICAL LITERATURE CLASSIFICATION

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101 AND 100 (1000)																									
PROCESS AND PROPERTIES INDEX																									
<div style="display: flex; justify-content: space-between;"> SA B64 T </div> <p>1736. Absorption in the Mercury Discharge. W. Fabrikant. <i>Phys. Zeits. J. Sowjetunion</i>, v. 3-3, pp. 240-243, 1936. In German.— The author's observations of the absorption of the yellow lines in the Hg discharge at high pressures are compared with those of Klenkman (see Abstract 2441 (1935)), and the conclusions drawn by the latter are criti- cized. C. B. A.</p>																									
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FABRIKANT, V.A.

3

1984

OPTICAL INVESTIGATIONS OF THE DISCHARGE IN METALLIC VAPOURS. 2. THE REABSORPTION OF RADIATION IN A MERCURY DISCHARGE. (Optische Untersuchungen Der Entladung In Metaldampfen). 2. Über Strahlungsreabsorption In Der Quecksilberentladung). V. A. Fabrikant and F. Butzov. Translated from *Fizik.* 2. Sovetskion 9, 383-404(1984). 15p. (TID/T4133B)

The assumption that only reabsorption can influence the intensity relationships of the mercury lines with common upper levels is discussed. It is shown that all observed intensity relationships can be qualitatively explained by the influence of reabsorption. The lower limits for the reabsorption coefficients of the individual lines are determined. It is shown that the results agree qualitatively with the thermal theory of mercury discharge at high pressures. (auth)

La Dr. Kanel, V. H.

4925

OPTICAL INVESTIGATIONS OF THE DISCHARGE IN METALLIC VAPOURS. 3. THE INFLUENCE OF THE PRESSURE ON THE RADIATION FROM DISCHARGES IN MERCURY AND CADMIUM VAPOUR. (Optische Untersuchungen über Entladung in Metalldämpfen. 3. Einfluss Des Druckes Auf Die Ausstrahlung Von Entladungen In Quecksilber Und Kadmiumdampf). V. A. Fabel'ant, A. B. Kanel, and E. Detska. Translated from *Fizika Zh. Sovetskoye* 10, 313-36(1966). 13p. (THU/T4133C)

It is established that the intensities of the lines of mercury and cadmium discharge spectra vary monotonously in relation to the pressure. A characteristic feature is the existence of an intensity minimum at a particular pressure. By comparing the measured results for lines with either an upper or lower common level, the part played by the reabsorption and the excitation potential could be explained. In addition, an alteration in the form of the curve for the angular distribution of the intensity was established with rising pressure. It could be shown that all the observed effects agreed well with simple theoretical estimates. (auth)

OPTICAL INVESTIGATIONS OF DISCHARGES IN METAL
VAPOURS. PART 4. THE ABSOLUTE CONCENTRATION
OF EXCITED ATOMS IN A LOW-PRESSURE MERCURY
DISCHARGE. Y. A. Fabrikant, P. Polak, and A. Tsire
[Zits]. T. ushiten from Physik. Z. Sowjetunion 11, 576-89
(1937). 9; (AERE-Trans-11/3/6, 313)

Absorption measurements were used to determine the
concentrations in which atoms appear in the levels
 $6^1P_{1,1}$ (10^{11} to 10^{12} atoms per cc) in a discharge tube at
pressures of 10^{-4} to 10^{-1} mm of Hg and with a current
intensity of 3 amp. It was ascertained that the conditions
of discharge were far from the state of temperature
equilibrium. It was also found that the distribution of the
atoms between the levels $6^1P_{1,1}$ corresponded to the ex-
citation functions which Penney has calculated for these
levels. In contrast to photoexcitation, the highest concen-
tration occurs in the highest level, 6^1P_2 . (auth)

3

Probability of cumulative excitation of mercury atoms.
A. A. Fabrikant and I. Tsirg. *Fizika. Zh. Sverkhsvetl.* 12,
324 9(1937)(in English); cf. C. A. 32, 2429. The
probability of cumulative excitation of Hg atoms is calcul.
from the intensity of lines in the Hg arc. G. M. M.

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

1st and 2nd groups

PROCESSES AND PROPERTIES INDEX

Shape of mercury lines. V. FARRIKANT and P. NITANVA (Physikal. M. Sovietunion, 1937, 12, 761-763).—The shape of the line λ 4358 Å. emitted by a high-pressure quartz Hg-vapour lamp at 10–20 atm. is measured. The line shows self-reversal which diminishes with increase in pressure while the broadening and shift increases. The mechanism of self-reversal at high pressure is different from that at low pressure. Conditions favourable for reversal are discussed. J. A. D.

ASD SLA METALLURGICAL LITERATURE CLASSIFICATION

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136

Absolute concentration of excited atoms in a low-pressure mercury discharge. V. FABRIK, ART. P. BUYAJEVA, and I. CHHO (Comp. rend. Acad. Sci. U.R.S.S., 1937, 14, 423-426; of this vol., 188).—By measuring the absorption in the discharge of visible triplet lines ending at the levels 6^3P_1 and 6^3P_2 , at these three levels were determined, and the results are discussed in relation to available calc. data. N. M. B.

ASH 514 METALLURGICAL LITERATURE CLASSIFICATION

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THEORY OF RADIATION OF A GASEOUS DISCHARGE.
V. FANUSHEV. (Compt. rend. Acad. Sci. U.R.S.S.,
1937, 16, 481-483).—A method for calculating the
total intensity of radiation in a discharge such that
secondary processes can be neglected, where electron
concn. and temp. are known, is developed. The
theory agrees with the results of Druyvesteyn and
Warmoltz (A., 1934, 124) for a Na discharge.
O. D. S.

ASSOCIATE METALLURGICAL LITERATURE CLASSIFICATION

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Probability of a stepwise excitation of mercury atoms.
 V. A. Fabrikant and I. Czig. *Compt. rend. acad. sci.*
 U. R. S. S. 10, 203 (1937) (in English).-- The dependence
 of radiation intensity on electron current at const. vapor
 pressure has been detd. The results show that in a dis-
 charge at high current d. and pressures, when at const.
 obey the Boltzmann distribution, the excitation of the upper
 levels takes place on the whole in stepwise fashion.
 Harold Gershinowitz

ASAC SEA METALLURGICAL LITERATURE CLASSIFICATION

Probability of collisions of the second kind between atoms and free electrons. V. KARLHANT (Comm. rend. Acad. Sci. U.R.S.S., 1937, 17, 735-736).—Mathematical. A quantitative application of the Klein-Rosseland relation is developed.

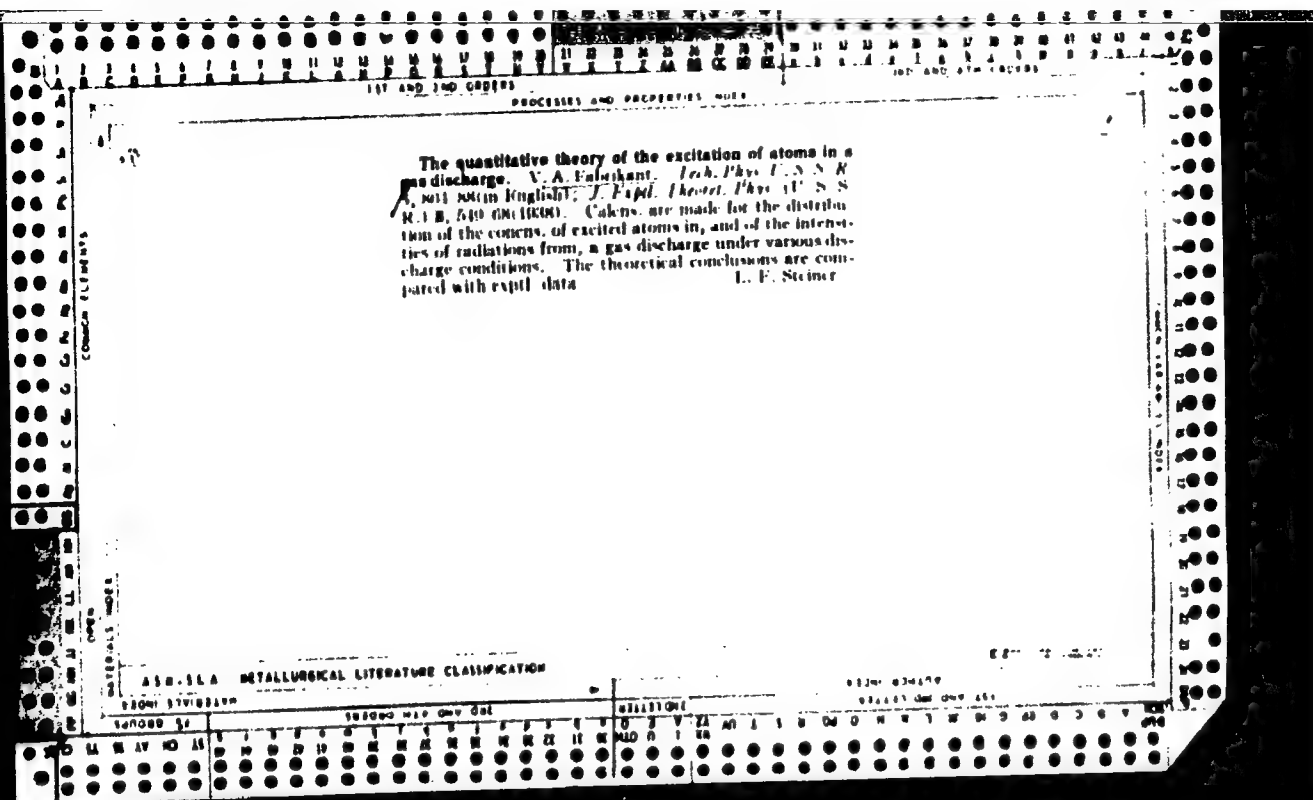
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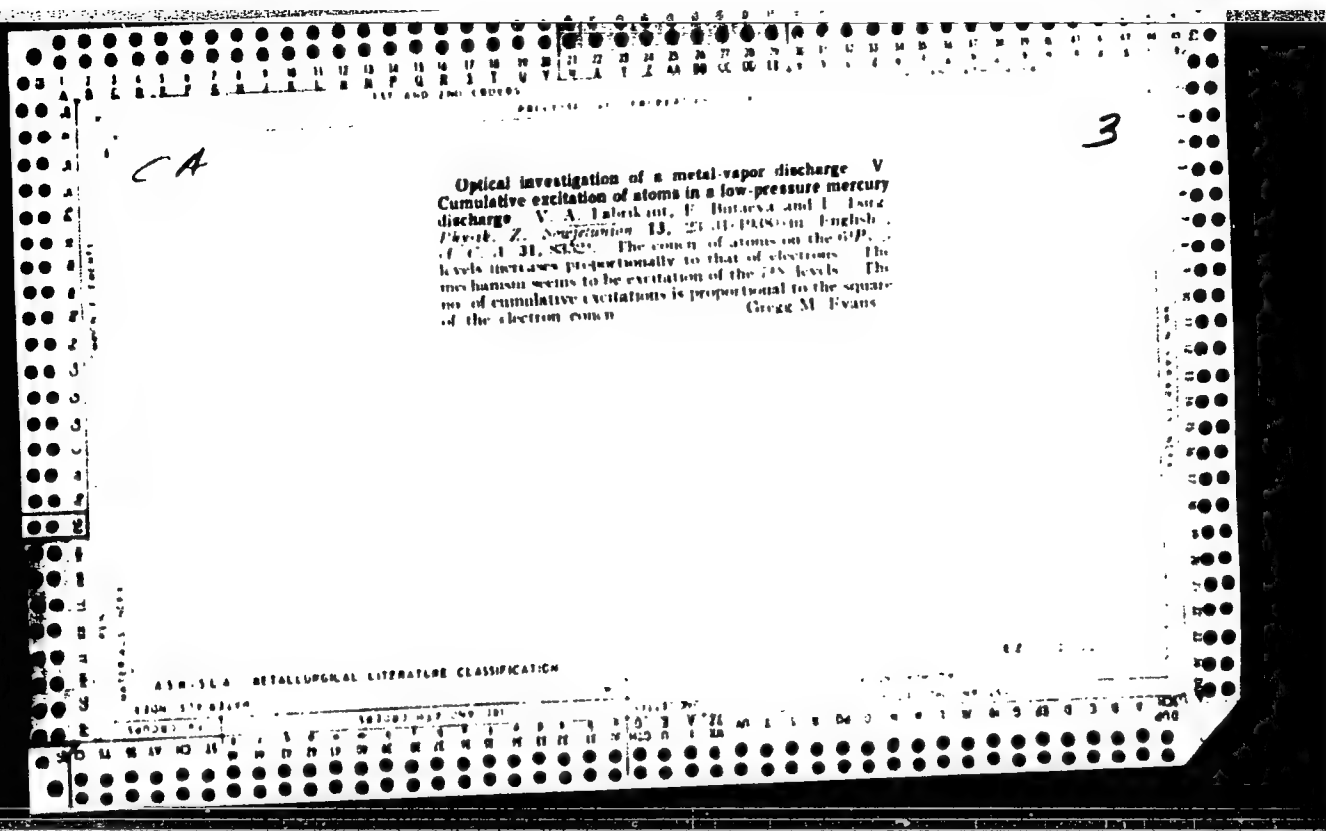
Intensity of spectrum lines in the gas discharge. V. A. FARRIKANT (Bull. Acad. Sci. U.R.S.S., 1934, Sér. Phys., 303-312). The abs. intensities of spectral lines calc. on the basis of elementary at. constants and electrical data coincide with the vals. obtained by experiment. The 1850 Å. line plays an important part in the radiation of the low-pressure discharge in Hg. The quenching of spectral lines by collisions of the second kind has been quantitatively investigated. The low-pressure discharge radiation of Hg vapour is a black-body radiation. The factors determining the shape of lines in the high-pressure discharge have been examined.

A. J. M.

Stepwise excitation of atoms in a low-pressure mercury
discharge. V. A. Fabrikant, F. Butarova and I. Tsing
Expil. Theoret. Phys. (U. S. S. R.) 8, 359 (1958). As
in the case of results cited from absorption-measurement
data, the no. of acts of stepwise excitation is strictly pro-
portional to the sq. root of the electron current.
F. H. Rathmann

ASD 55.6 METALLURGICAL LITERATURE CLASSIFICATION





PERIODIC TABLE OF ELEMENTS																																																																													
GROUPS AND PERIODS													PROCESSES AND PROPERTIES INDEX																																																																
<p><i>BC</i></p> <p>Excitation of metastable atoms in a gas discharge. V. FARRIKANT (Compt. rend. Acad. Sci. U.R.S.S., 1934, 10, 385-388).—In the discharges in Hg rectifiers the excited atoms constitute about 10% of the total and have a Boltzman distribution. At the initial moment (stationary discharge) the excited atoms are distributed over the discharge section according to Bessel's function and not uniformly (cf. Meisner and Graffunder, A., 1928, 212), and an exponential abatement in concn. occurs with time. F. J. L.</p>																																																																													
<p>ASB-5LA METALLURGICAL LITERATURE CLASSIFICATION</p>																																																																													
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Excitation of radiating atoms in a gas discharge. V. HARRISMAN. (Compt. rend. Acad. Sci. U.R.S.S., 1933, 19, 333-335).—Theoretical calculations of the constant of excited radiating atoms based on the analogy between the diffusion of quanta and atoms suggested by Compton (Physical Rev., 1922, 20, 233). F. J. L.

ASB-55A METALLURGICAL LITERATURE CLASSIFICATION

BC

Effect of magnetic field on mercury discharge radiation. V. FARRISANT and I. ROOHLIN (Dokl. Akad. Nauk SSSR, 1958, 19, 363-366).—The effect of the magnetic field produced by two solenoids on the luminous discharge from a low-pressure, HgO-coated, liquid-cathode Hg lamp is investigated. The luminosity of the positive column is little affected by a longitudinal homogeneous field, but a non-homogeneous field increases the intensities of the lines $\lambda\lambda 5461, 5770-5791$ Å. 6-7 times and of the resonance lines $\lambda\lambda 1849$ and 2537 Å. 2-3 times. The magnetic field causes distortions of the electron paths and increases the no. of collisions between atoms and electrons. F. J. L.

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

The effect of a magnetic field on mercury discharge radiation. H. V. A. Fabrikant and O. Rokhlin. *Compt. rend. acad. sci. U. R. S. S.* 20, 437-40 (1938) (in English); cf. C. A. 33, 12561. — The distribution of electrons over the discharge cross-section, within a longitudinal magnetic field, of a Hg discharge at low pressure was detd. with the optical method. A max. concn. of electrons occurs at some distance from the axis of the discharge. The decrease in mean electron energy produced by the longitudinal magnetic field was measured. L. E. Steiner

AND SLA DETAILING LITERATURE CLASSIFICATION

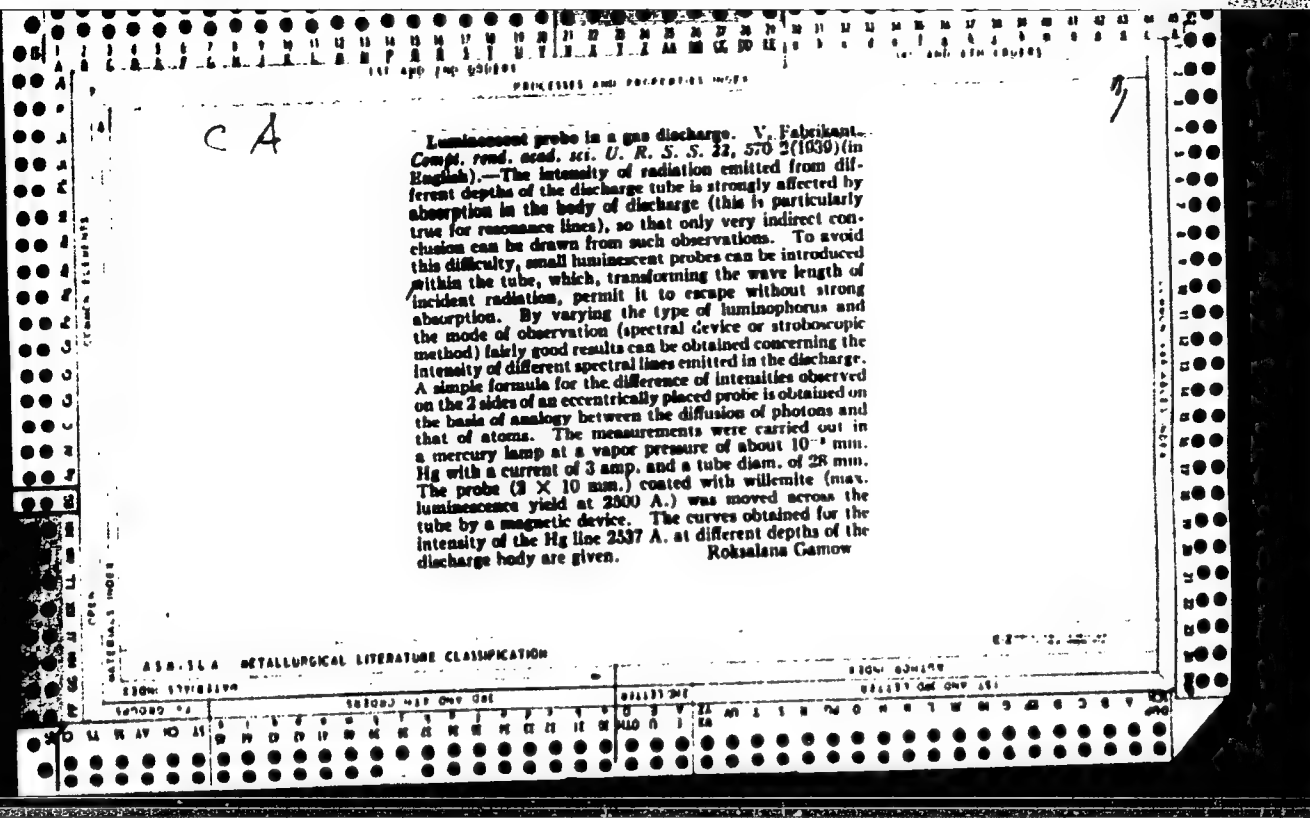
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A-1

Excitation of atoms in a rare-gas discharge.
V. FARRIKANT and K. PANEVNIK (Compt. rend. Acad.
Sci. U.S.S.R., 1938, 20, 441-444).—A discussion of
the cause of the max. which is observed in the concn.
of excited atoms in a rare-gas discharge when the c.d.
is increased. J. A. K.

ADD-51A METALLURGICAL LITERATURE CLASSIFICATION

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Excitation of atoms in a gas discharge V. A. Fabrikant. *Compt rend acad sci U R S S* 23, 2448 (1960) (in English), cf. *ibid.* 32, 8269, 8270, 33, 6137. Corrections are computed mathematically for previous calcs. involving excitations of atoms in a gas discharge where the assumption had been made that the concn. of excited atoms or photons on the walls of the discharge tube equaled zero. Recourse is had to the more precise boundary conditions used for the soln. of diffusion problems connected with excitation of atoms in a gas discharge. George Ayers

117 AND 118 DOTTED

PROCESSES AND PROPERTIES

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P 1

Distribution of electrons over the section of a gas discharge. V. FABRIKANT (Compt. rend. Acad. Sci. U.R.S.S., 1938, 24, 531-533).—Theoretical. The influence of cumulative ionization kind of vol. recombination on the distribution of electrons has been studied. The first effect is small but the second may become large, especially near equilibrium temp. O. D. S.

ASB-5LA METALLURGICAL LITERATURE CLASSIFICATION

SUBJECT										AUTHOR										TITLE										PUBLICATION									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

BC

17-1

Probability of excitation of a potassium atom.
V. FARMAN (Compt. rend. Acad. Sci. U.R.S.S.,
1938, 26, 643—664).—From the data of the preceding
paper, the effective cross-section of the K atom for
excitation by electron impact is calc. as $2 \cdot 0 \times 10^{-11}$
sq. cm.
L. J. J.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

Luminous probe in a gaseous discharge. F. A. Butaeva and V. A. Fekhtman. *Sov. Acad. Sci. U. S. S. R. Phys. Ser. Phys.* 4, 125-7 (1940); cf. preceding abstr. - The method of luminous probe was employed for the detailed study of radiation density of the line 2537 Å. in a tail of Hg discharge tube (diam. 30 mm, $I = 3$ amp.) at 3 different pressures (1, 3 and 0.5×10^{-3} mm. Hg). The observed curves show a slight asymmetry, which is due to minute absorption of the luminous radiation in the body of the discharge. From two curves, photographed from the opposite sides of the tube, are obtained symmetrical curves representing real distribution of radiation density within the tube. The variations of radial energy flow can be obtained by differentiating density curves. The comparison of observed curves with the theoretical expressions based on the analogy between diffusion of photon and of atom showed that this analogy can be used only up to a certain limit. Rokasana Gamow

ADD-514 DETAILING LITERATURE CLASSIFICATION

Effect of a longitudinal magnetic field on the positive plasma column (in Russian). V. S. Balashov and A. M. P. Rod. *Izv. Vuzov, R. S. S. S. R.*, No. 9 (1940) (in English). By use of the boundary condition that the flux of ions is zero from the walls of the tube, the following equation is derived $\ln a/r = -(2/\bar{C}_p)(D_p - D_e)$ where a = cons. n. of ions, D_p = ambipolar diffusion coeff., D_e = ion diffusion coeff., and \bar{C}_p = sp. heat. The effect of a longitudinal magnetic field may be to decrease D_p and thus lead to an abrupt drop in the consn. from the tube axis in the direction of the walls. The influence of magnetic fields on ion mobilities is small. However, electron mobilities are strongly affected and the movement of electrons in the direction of the walls is hindered. Under sufficiently strong fields the above boundary condition may be applied to electrons instead of ions. This leads to the idea that electrons and ions exchange roles when the diffusion coeff. for electrons in a direction perpendicular to the magnetic field becomes less than D_p . E. A. Gulbransen

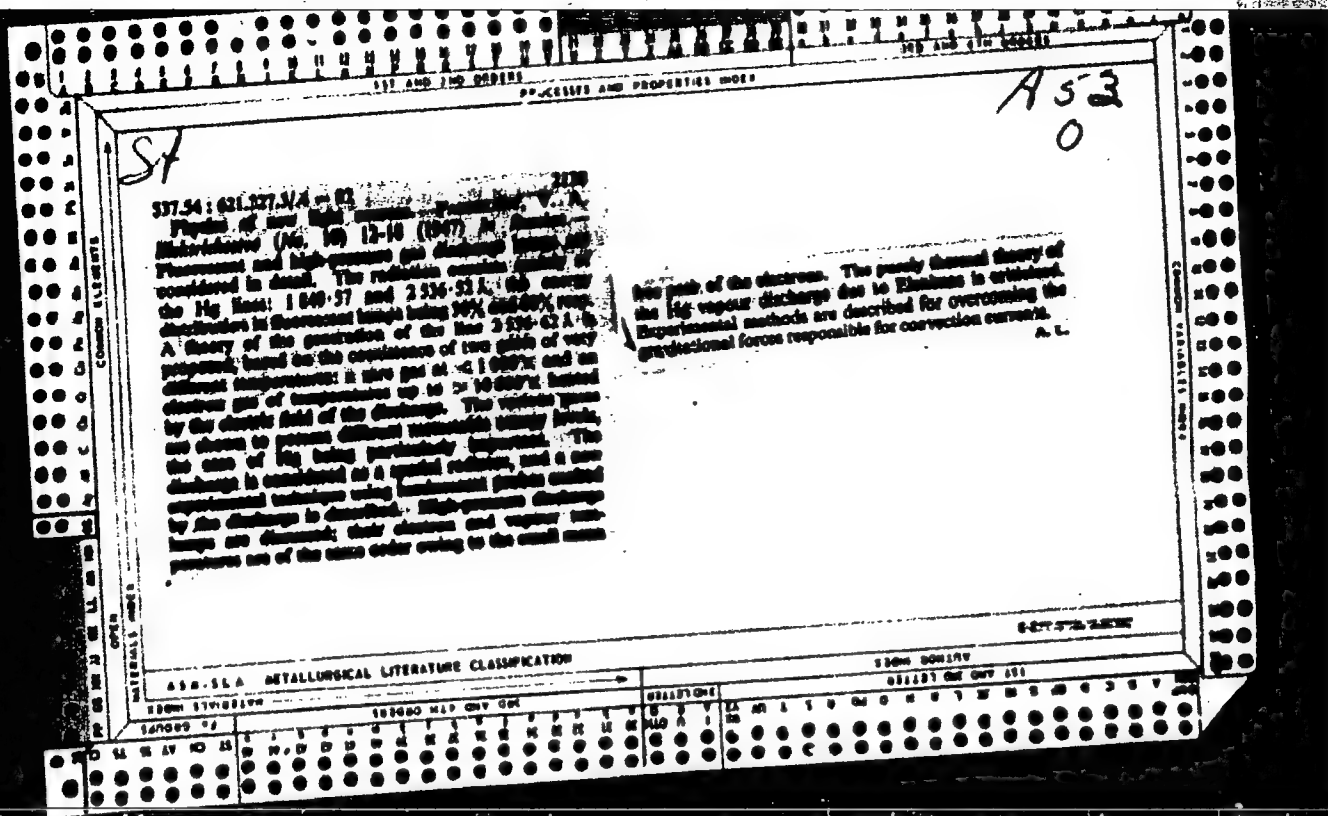
E. A. Gultyaev

ASB-32A METALLURGICAL LITERATURE CLASSIFICATION

Resonant radiation of a discharge in a mixture of mercury vapor and argon. V. Butaeva and V. A. Pakawet
Hull, Acad. Sci. U.S.S.R., Ser. phys. 9, 283 (1945)
 A quartz probe with luminescent willemite screen is introduced into the discharge tube. Part of the screen can be covered by a filter transparent to line 2537 Å, and absorbing line 1849 Å. The diam. of the tube was 34 mm, the current 0.35 and 3 amp. The ratio of the intensities of the lines 1849 Å. and 2537 Å. decreased with increasing pressure in accordance with the theory. In a mixt. of 11g and 4 mm. A the ratio is decreased 2.7 times as the electron temp. (measured with Langmuir probes) decreases from 18,000 to 13,000°K. The ratio decreases also when the current is raised from 0.35 to 3 amp. This is attributed to the increase of 2537-Å. radiation by secondary processes involving metastable states. S. Pakawet

ASD-11A METALLURGICAL LITERATURE CLASSIFICATION

FUNDAMENTALS 530.1									
<p>530.1 - 82 2758 A general survey of contemporary physics is given. The basis of modern physical science rests on de Broglie's formula: $\lambda = h/mv$ and Einstein's law: $E = mc^2$. Principles of wave mechanics are explained with the help of conceptions of potential barrier and "tunnel effect." A physical picture of electric currents in conductors is presented: electrons move freely in insulators and conductors alike, but react only in the latter when an electromagnetic field is applied. The indeterminacy principle is discussed and applied in the concrete example of utilization of the outer electron surface of carbon atoms (chemical energy); the result agrees with the known thermal yield of burning coal. The present state of nuclear physics and atomic disintegration is surveyed. A. L.</p>									
<p>ASR-5LA METALLURGICAL LITERATURE CLASSIFICATION</p>									



C.A.
1951

Luminescent probes and diffusion of radiation in gases.
Y. F. Izrael. Zhur. Eksp. Teor. Fiz. 17, 1037-40 (1947).
 Present methods of measurements of the radiation emitted
 in gaseous discharges are vitiated particularly by diffusion
 and absorption taking place in the bulk of the gas, and con-
 sequently fail to provide information about the distribution
 of the radiation in the vol. The method of luminescent
 probes has the important advantage that the luminescence
 the wave length of which does not coincide with the reso-
 nance wave length of the gas, is not absorbed in the gas.
 Formulas are derived relating the brightness of the lumines-
 cent probe with the macroscopic characteristics of vol. d.,
 Poynting vector, and the radiation free path of the photons,
 microcharacteristics of the mean free path of the photons,
 the concn. of the emitting atoms, and the no. of excitations
 acts. These magnitudes are functions of the coordinates
 of the point at which the probe is placed, and, consequently,
 measurements of the brightness of the luminescence permit
 the establishment of the form of these functions. The ef-
 fects of nonexponential decay of the luminescence, and of the
 perturbation brought in by the probe, are analyzed.
 N. Thon

1. FABRIKANT, V. A.
2. USSR (600)
4. Physics and Mathematics
7. Collision of Electrons and Ions with Atoms of a Gas, L. A. Senu.
(Leningrad-Moscow, State Technical Press, 1948) Reviewed by
V. A. Fabrikant, Sov. Kniga, No. 8, 1949.

9. [REDACTED] Report U-3081, 16 Jan. 1953. Unclassified.

FABRIKANT, V. A. and STRONG, J.

Practice of the Modern Physics Laboratory. Translated from the English under the editorship of Prof. V. A. Fabrikant. Glavpoligrafizdat, Main Polygraphic Publishing House, 1948, 443pp., 1952.

CA

Influence of the parameters of the discharge on the intensities of the mercury resonance lines 1850 and 2537 Å. F. A. Butaeva and V. A. Fabrikant. *Zhur. Tekh. Fiz.* 18, 1127-35 (1948); cf. *C.A.* 43, 6905i. — The intensities i were measured under Hg vapor pressures from 0.0002 to 0.026 mm. Hg, at 2 current intensities, 0.25 and 2.5 amp., with the aid of a luminescence spectrophotometer, with visual and photoelec. estn. of the brightness. In terms of the pressure, the ratio of i of the line 1850 Å. at 2.5 and at 0.25 amp. remains const. over the whole range, and approx. = 10, i.e. equal to the ratio of the current intensities. For the line 2537 Å., that ratio of i falls with increasing pressure, from over 30 to about 5. At 0.003 mm. Hg, i of 2537 increases more rapidly than the current; at 0.013 the increase is linear with the current, and at 0.026 it is slower than linear. At any of these pressures, the increase of i of 1850 is proportional to the current. At const. current intensity, 0.3 amp., and varying pressure, the max. of i of 1850 lies at lower pressures than that of 2537. Addn. of 4 mm. A increases i in both cases, but causes a shift of the max. (to lower pressures) only for 2537, not for 1850. Under these conditions, the max. of i of both lines lies at the same pressure of the Hg vapor, 6.5×10^{-3} mm. The simple proportionality between i and the current intensity for the line 1850 is due to the simple excitation mechanism of that line. It undergoes quenching only at high pressures. N. Thon

<p>131 AND 132 000101</p> <p>PROCESSED AND PROTECTED COPY</p> <p>35732: 35732</p> <p>SA</p> <p>4 53</p> <p>P</p>	
<p>286. The influence of discharge parameters on the intensity of lines 1850 and 2537 Å in luminous lamps. P. A. BUTARYA AND V. A. FARMKANT. <i>Izv. Akad. Nauk, SSSR, Ser. Fiz.</i>, 13 (No. 2) 271-4 (1949) In Russian.</p> <p>Reference is made to previous papers [Dokl. Akad. Nauk, SSSR, 27, 654 (1940); <i>J. Tech. Phys.</i>, 14, 1175 (1944)] dealing with the part played by the line 1850 Å in the excitation of luminophores in fluorescent tubes. The absorption in air of that line influencing the accuracy of research, new measurements have been carried out with the use of a vacuum monochromator. The influence of (1) current intensity, (2) vapour pressure of Hg, and (3) presence of A, on the intensity of lines 1850 and 2537 Å, and the relative sensitivity of luminophores to the light of these two wavelengths have been examined. The relationship between current intensity and the intensity is linear in the case of the line 1850 Å, and rather complicated in the case of the line 2537 Å. Changes in vapour pressure produce maxima for both wavelengths. In the presence of A identical conditions are optimal for the generation of both resonance lines, and these conditions correspond to usual working conditions in fluorescent tubes. Light sensitivity to lines 1850 and 2537 Å of crystalline luminophores has been compared with that of such luminophores as machine oil, mesquite, rhodamine, uranium glass. [See also Abstr. 2521 (1949)].</p> <p>P. LACHMAN</p>	
<p>ASB-ELA METALLURGICAL LITERATURE</p> <p>250N 5710310N</p> <p>140000 04</p>	<p>6-27157L 34500</p> <p>200N 200100</p> <p>031107 000 000 501</p>

FABRIKANT, V. A.

USSR/Physics

Electron Diffraction

Electron Microscopy

12/1/49

May 49

"Alternate Diffraction of Flying Electrons," L. Fiberman, M. Sushkin, V. Fabrikant,
Moscow Power Eng. Inst. imeni V. M. Molotov, 2 pp
"Dok Ak Nauk SSSR" Vol LXVI, No 2

Experiments on diffraction of electrons are usually carried out in powerful beams. Experience has shown the diffraction picture is independent of the intensity of the electron beam. On this basis, an imaginary experiment is discussed in terms of quantum mechanics in which electrons are diffracted one by one and wave properties are ascribed to each particle. At present there can hardly be any doubts as to the correctness of this assumption; however, importance of experiments on diffraction of particles is so great that there is some point in carrying out a real experiment on diffraction of single electrons. Describes such an experiment, using a modified electron microscope, type EM-100. Includes two photographs. Submitted by Acad S. I. Vavilov, 16 Mar 49.

FABRIKANT, V. A

USSR/Nuclear Physics - Atoms, Excitation of Oct 51

"Excitation of Atoms in Mercury Discharge," V. Fabrikant, B. Yavorakiy, Moscow Power Eng Inst

"Zhur Eksper 1 Teoret Fiz" Vol XXI, No 10, pp 1180, 1181

Authors refer to work by Kagan and Perkin ("Iz Ak Nauk SSSR, Ser Fiz" 14, 1950) in which the latter quotes inaccurately results by Yavorakiy and Fabrikant. Nevertheless exptl results by Kagan

LC

1977101

USSR/Nuclear Physics - Atoms, Excitation of (Contd) Oct 51

and Perkin confirm qualitatively results previously obtained by different method by Fabrikant, Butayeva and Tsirg (ibid. 7, 1937; 8, 1938). Submitted 20 Apr 51.

LC

1977101

337.323
6536. The concentration of excited atoms in a mercury discharge. YU. M. KAGAN AND N. P. PINKIN.
Izv. Akad. Nauk, SSSR, Ser. Fiz., 14, 721-6 (No. 6, 1950) In Russian.

On the excitation of atoms in the class of mercury.
V. FABRICANT AND B. YAROVSKII, *Zh. Eksp. Teor. Fiz.* (No. 10, 1951) In Russian.

On the excitation of atoms in the class of mercury.
YU. KAGAN AND N. PINKIN. *Ibid.*, 1182-3. In Russian.

USSR/Physics - Light

MAY 51

"S. I. Vavilov's Book 'The Microstructure of Light,'" V. A. Fabrikant

"Uspekh Fiz Nauk" Vol XLIV, No 1, pp 117-135

Gives short exposition of main contents of book

"Mikrostruktura Sveta" (Microstructure of Light)

published in Moscow by Acad Sci USSR in 1950; 198 pp. Discusses exptl investigation of fluctuations in light by visual methods; premises and certain conclusions of elementary sci of light interference; properties of light emitted by absorbing media.

183794

USSR/Physics - Light (Contd)

MAY 51

Vavilov's book shows comparatively simple methods can be used to investigate complex phenomena. Thus Vavilov shows how study of luminescence of complex solids can explain properties of elementary radiators.

FABRIKANT, V. A.

183794

1. FABRIKANT, V. A.
2. USSR (600)
4. Physics and Mathematics
7. Works on Anomalous Dispersion in Vapors of Metals, D. S. Rozhdestvenskiy;
S. E. Frish, Corr-Mem Acad Sci USSR (editor); N. P. Penkin (commentator).
("Classics of Science", Acad Sci USSR Press, 1951). Reviewed by
V. A. Fabrikant, Sov. Kniga, No. 7, 1952.

9. [REDACTED] Report U-3081, 16 Jan 1953, Unclassified.

1. MESHKOV, V. V.: IVANOV, A. P.: KIRILLIN, V. A.: GLAZUNOV, A. A.: PANTYUSHIN, V. S.:
ZOLOTAREV, T. L.: BABIKOV, M. A.: ~~FABRIKANT, V. A.~~ ZHDANOV, G. M.: PEREKALIN, M.A.:
KOMAR, V. G.: TALITSKIY, A. V.:

2. USSR (600)

4. Kaganov, I. L. 1902-

7. Professor I. L. Kaganov; fiftieth birthday anniversary.
Elektrivhestvo, No.11, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953, Unclassified.

FABRIKANT, V. A.

USSR/Physics - Bibliography

Jan 52

"Bibliography," V. A. Fabrikant, L. Biberman

"Uspekhi Fiz Nauk" Vol XLVI, No 1, pp 134-138

D. N. Lazarev, "Ultraviolet Radiation and Its Application" Leningrad/Moscow, 1950, 119 pp. Favorable review.

S. Chandrasekhar, "Radiation Transfer" Oxford, 1950, 393 pp. Allegedly appropriated methods of V. A. Ambartsumyan. Despite some deficiencies still useful. [sic]
List of 62 new Russian books in physics, pp 139-144.

209T104

USSR/Physics - Book Reviews

May 52

"Bibliography: Reviews of Two Soviet Books," V. Fabrikant and M. Radovskiy

"Uspekhi Fiz Nauk" Vol XLVII, No 1, pp 150-158

V. Fabrikant reviews favorably S. I. Vavilov's book "Eye and Sun (On Light, Sun, Vision)," 5th edition, revised and corrected; published by scientific-popular section of Acad Sci USSR Press, Moscow/Leningrad; 1950, 122 pp, 25,000 copies, 4 rubles. M. Radovskiy reviews favorably historically important book "Theory of Electricity and Magnetism," by F. U. T. Epstein /member of Berlin Academy, died 1883/, editing and comments by Prof 219T79

Ya. G. Dorfman; published as part of "Classics of Science Series" by Acad Sci USSR Press, 1951, 564 pp, 26.50 rubles.

FABRIKANT, V.

219T79

1. FABRIKANT, V. A.
2. USSR (600)
4. Electric Discharges through Gases
7. "High pressure mercury vapor discharge (in English). W. Yellenbaas. Reviewed by V. A. Fabrikant. Usp.fiz.nauk, 48, no. 4, 1952.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

CHILIKIN, M.G.; KIRILLIN, V.A.; POLIVANOV, K.M.; ~~FABRIKANT, V.A.~~;
NILENDER, R.A.; KAGANOV, I.L.; IVANOV, A.P.; ZHDANOV, G.M.

Professor V.V.Meshkov. Fiftieth birthday and 25 years of
scientific and teaching activity. Elektrichestvo no.1:93
Ja '54. (MLRA 7:2)
(Meshkov, Vladimir Vasil'evich, 1904-)

USSR/ Scientists - Book review

Card 1/1 Pub. 124 - 37/40

Authors : Fabrikant, V. A., Professor

Title : Publication of S. I. Vavilov's works

Periodical : Vest. AN SSSR 1, 123-127, Jan 1955

Abstract : The publication of several volumes of Academician S. I. Vavilov's works is announced. The manuscripts, dealing mostly in physics (quantum nature of luminescence, applicability of the Einstein law to luminescence, etc.), are reviewed.

Institution :

Submitted :

FABRIKANT, V.A., professor, doktor fiziko-matematicheskikh nauk.

Some physical problems of the origin of light. Svetotekhnika 1
no.6:3-7 D '55. (MLRA 9:4)

1. Moskovskiy energeticheskiy institut.
(Light)

FABRIKANT

⁸
LEVEDEVA, V.V.; FABRIKANT, V.A.

Intensity correlations in the visible triplet of mercury. Izv.
AN SSSR. Ser. fiz. 19 no.1:7-8 Ja-F '55. (MLRA 8:9)

1. Moskovskiy energeticheskiy institut imeni V.M.Molotova i
Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta
imeni M.V.Lomonosova
(Spectrum analysis) (Spectrometer)

FABRIKANT, V.A Dr. Phy-Math. Sci.

"Success in Luminescence," from the book Modern Military Technology, 1956, page 217.
Translation 1114585.

FABRIKANT, V.A.

GUREVICH, M.M., professor; KARYAKIN, N.A., professor; MESHKOV, V.V.,
professor; SOKOLOV, M.V., professor; TIKHODEYEV, P.M., professor;
~~FABRIKANT, V.A.~~ professor; IVANOVA, N.S., kandidat tekhnicheskikh
nauk; SHNEYBERG, Ya.A.; YUROV, S.G.; ASHKENAZI, G.I., inzhener.

Professor L.D. Bel'kind; on his sixtieth birthday. Svetotekhnika
2 no.5:26 S '56. (MLRA 9:11)

(Bel'kind, Lev Davidovich, 1896-)

FABRIKANT, V. A.

535 112

1.16 INVESTIGATIONS USING LUMINESCENT PROBES
 RANGE 400-1200 Å. V. A. FABRIKANT and V. A. FADDEYEV
 Zh. tekh. fiz. Vol. 13, No. 4, pp. 54-58, 1977

In these experiments a discharge tube was used with He, Ne, Ar at pressures of about 1 mm Hg. A small amount of a gas which gives a green emission readily detected the intense radiation of the discharge. An electric probe is moved across the jet of the discharge. The intensity of the probe's emission when the radiation was measured optically. Discharge was varied from 0.01 to 1 A. Luminescent probes used to determine the volume density of the radiation from the gas, the magnitude and direction of the Umov-Poynting vector and the divergence of the radiation flow at each point of the radiating volume. In the experiments it was found that the distribution of the volume density of the emission depends only to a small extent upon the nature of the gas and the discharge conditions. The value of the energy volume density of radiation at the edge of the discharge enables a rough estimate to be made of the mean free paths of photons.

V. A. FABRIKANT

РАБОТНИК, В.А.

Investigation by means of [unclear]

1200-A. Region [unclear]

Soviet Phys. Tech. Phys. [unclear]

1961 - See CA 50, 1962

FABRIKANT, V.A., doktor fiz.-mat. nauk, prof.

~~Forty years of Soviet physical optics.~~ Svetotekhnika 3 no.11:3-9
N '57. (MIRA 10:12)

1. Moskovskiy energeticheskiy institut.
(Optics, Physical)

FABRIKANT, V. A.

NETUSHIL, A. V., doktor tekhnicheskikh nauk, professor; FABRIKANT, V. A.,
doktor fizicheskikh-matematicheskikh nauk, profesor.

G. R. Kirchhoff. Elektrichestvo no. 10:71-73 0 '57. (MLBA 10:9)

1. Moskovskiy energeticheskiy institut.
(Kirchhoff, Gustav Robert, 1824-1887)

48-4-24/48

Fabrikant, V. A.

SUBJECT: USSR/Luminescence

AUTHORS: Butayeva F. A. and Fabrikant V.A.

TITLE: Sensitivity of Luminophores for Luminescent Tubes to Ultraviolet Radiation of Short Wavelengths (Chuvstvitel'nost' lyuminescentnykh lamp v korotkovolnovom ul'trafiolotovom izluchenii)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1957, Vol 21, # 4, pp 541-543 (USSR).

ABSTRACT: The relative sensitivities of tube luminophores to mercury lines of 1,850 and 2,537 Å were directly measured. A specially designed vacuum monochromator was used. The brightness of the luminophores at their excitation by the 1,850 and 2,537 Å lines was measured by a photomultiplier. Table 1 in the article gives data for the ratio of sensitivities of these lines. Table 2 gives results of calculations of the quantum yield. These data indicate quantum yields exceeding 1 at the excitation by the 1,850 Å line. The ratio of sensitivities depends on the type of a luminophore.

Card 1/2

53-2-9/9

G.S. Landsberg as an Author and Editor of Textbooks in Physics

it already showed a marked influence on the standard of physical knowledge in high schools. According to the opinion of Landsberg even in high school physics must be taught as a science (or at least an introduction to this science) and not only as a compilation of facts and information. Studying at a high school should be arranged in such a way, that the student later on has only to increase his knowledge and is not forced to relearn everything. The textbook by Landsberg also furnishes a clear interpretation of the technical applications of physics. Among others the results of modern aero- and hydrodynamical research are taken into consideration. The second volume of the elementary textbook (High School Textbook) contains a separate chapter on semiconductors. (The first volume contains mechanics and heat, the second electricity and magnetism, the third optics and structure of the atom). The separate chapters of the "Elementary Textbook of Physics" are written by different authors, the guidance of Landsberg, however, is noticeable everywhere. According to the judgement of the examiners at the entrance examinations of the universities the students who have used Landsberg's book can be distinguished easily. Finally Landsberg's book "Optika" is described.

Card 2/3

20-3-21/60

On the Gradual Excitation of Atoms

and also by means of a photomultiplier with 13 cascades. Further details of the tests are described. A diagram illustrates one of the experimental curves for the green line 5461 Å. A weak luminescence was observed beginning at ~ 5 eV. The entire part of the curve lying on the left side of 7.73 eV corresponds to the acts of gradual excitation in pure form. The steep ascent of the curve at energies above 8 eV is explained by the rapid increase in the cross section for the direct excitation processes. The position of the maximum is, in comparison with the maximum of the excitation function of the level 6^3P_1 (6,6 eV), somewhat displaced to the right side.

The accurate analysis of the shape of the curve is made difficult by the fact that the exact excitation functions of the

levels $6^3P_{0,2}$ and 6^1P_1 are unknown. Preliminary measurements

showed that the intensity of the lines of the visible triplet in the domain of gradual excitation increases with the second power of the current intensity. At a constant life span of the atoms it is to be expected that such laws are prevalent on the levels 6 P. There are 1 figure and 4 references, 2 of which are Soviet.

Card 2/3

FABRIKANT, V. A.

"Optical Methods of the Investigation in Gases."

paper presented at Second All-Union Conference on Gaseous Electronics, Moscow,
2-6 October '58.

High Voltage Inst., Moscow

SOV/51-5-1-1/19

AUTHORS: Titushina, V.P. and Fabrikant, V.A.

TITLE: Investigation of the Radiation Flux Divergence of the 2537 Å Line in a Mercury Discharge (Issledovaniye divergentnoi potoka izlucheniya linii 2537 Å v rtutnom razryade)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol 5, Nr 1, pp 3-9 (USSR)

ABSTRACT: Under steady-state conditions the divergence of radiation at a given point is given by the difference in the number of collisions per unit time which excite atoms and the number of collisions which de-excite these atoms. If the excited atoms are not affected by secondary processes, such as collisions of the second kind or cumulative excitation, the radiation divergence (div G) should be proportional to the electron density (n_e). In this case the curves of distribution of div G and n_e across the discharge tube should be similar. If the secondary processes are important then the curves of distribution of div G and n_e across the tube should be different. The authors investigated the 2537 Å line in a positive column of an arc discharge in low-pressure mercury vapours. Construction of the discharge tube was similar to that described by Klyarfel'd (Ref 4).

Card 1/3

SOV/51-5-1-1/19

Investigation of the Radiation Flux Divergence of the 2537 Å Line in a Mercury Discharge

The discharge tube diameter was from 32-38 mm, the length of the positive column was 450-500 mm. Measurements were made at various pressures of mercury from 2×10^{-4} to 1.5×10^{-2} mm Hg and currents from 0.2 to 2.5 amperes d.c. A vibrating luminescent probe was used with its surface parallel to the discharge-tube axis. The vibrating probe method was described in detail by Titushina (Ref 6). Div G was calculated from the brightness of the probe emission, which was measured. Simultaneously with optical measurements the authors found the electron temperature and density using Langmuir and Mott-Smith probes. Fig 1 shows the distribution across the tube of the radiation divergence (black dots) and electron density (open circles). Both these quantities are given in the form of ratios of the value at a particular point to the value at the discharge-tube axis. At low pressures (5×10^{-4} mm Hg) and $\text{div } G / (\text{div } G)_0$ curve (subscript 0 denotes the value at the discharge-tube axis) falls faster at the tube walls than the n_e / n_{e0} . At pressures of the order of 6×10^{-3} mm Hg the two curves coincide, but at higher pressures (1.5×10^{-2} mm Hg) the $\text{div } G / (\text{div } G)_0$ curve falls more slowly than the electron density. The differences between the two curves indicate that in the pressure regions around 10^{-4}

Card 2/3

Investigation of the Radiation Flux Divergence of the 2537 Å Line in a Mercury Discharge

SOV/51-5-1-1/19

and 10^{-2} mm Hg secondary processes are important in the mechanism of excitation of atoms to the 6^3P_1 level. At pressures of the order 10^{-4} mm Hg and discharge currents of 0.5 A the secondary processes intensified emission of radiation. At pressures near 1.5×10^{-2} mm Hg and discharge currents of 0.5 and 1 A different secondary processes are active and they quench resonance radiation. Fig 2 shows the dependence of the ratio $\text{div } G/n_e$ at the discharge-tube axis on the current. Fig 3 shows the discharge current dependence of $\text{div } G/n_e$ at a distance of $0.8 R$ (R is the tube radius) from the axis. In Figs 2 and 3 numbers 1, 2, 3, 4 refer to pressures of 5×10^{-4} , 3×10^{-3} , 6.5×10^{-3} and 1.5×10^{-2} mm Hg respectively. A short theoretical treatment of the observed effects is given. It relates the radiation divergence to the probability of primary excitation processes and the probability of secondary processes (intensification or quenching of emission) as well as to the electron density. It is concluded that the mechanism of excitation to the 6^3P_1 level is complex and it is determined by diffusion of radiation and the electron density. There are 3 figures and 6 Soviet references.

Card 3/3

ASSOCIATION: Moskovskiy energeticheskiy institut (Moscow Power Institute) 1. Radiation
SUBMITTED: July 4, 1957 --Theory 2. Discharge tubes--Properties 3. Atoms--Excitation
4. Secondary emission 5. Mercury--Applications

SOV/51-5-6-17/19

AUTHOR: Fabrikant, V.A.

TITLE: On the Theory of Experiments on Deactivation of Metastable Atoms in Collisions with Atoms or Molecules (K teorii opytov s dezaktivatsiyey metastabil'nykh atomov pri stolknoveniyakh s atomami i molokulami)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol 5, Nr 6, pp 711-712 (USSR)

ABSTRACT: Kvift and Vegard (Ref 1) studied the 5577 Å green line of oxygen emitted by metastable oxygen atoms in an electric discharge. This line corresponds to a forbidden transition $1S-3P$. The main experimental and theoretical results of Ref 1 are given in Massey and Burhop's monograph (Ref 2) who say that Kvift and Vegard's method includes many assumptions which are difficult to prove. The present author (Fabrikant) questions Kvift and Vegard's assumption that the number of exciting collisions across a cylindrical discharge tube is constant. He suggests that this assumption is incorrect since the electron concentration falls sharply at the discharge-tube walls and it is best described by the zero-order Bessel function. Fabrikant derives a formula for the mean concentration of metastable atoms $\bar{n}_a = 0.44 n_a^2 / (5.8D + Za^2)$, where n_a is the number of exciting collisions with electrons at the discharge tube axis, a is the discharge

Card 1/2

SOV/51-5-6-17/19

On the Theory of Experiments on Deactivation of Metastable Atoms in Collisions
with Atoms or Molecules

tube radius, D is the coefficient of diffusion of metastable atoms and Z is the number of deactivating collisions with atoms and molecules. Fabrikant's formula differs only by a numerical multiplier from the formula given by Kvift and Vegard (Eq. 36) and Massey and Burhop (Eq. 7, 83). When the probability of deactivation by electron collisions does not exceed the probability of diffusion by more than five or six times, Fabrikant's formula is still applicable but Z should include collisions not only with atoms but also with electrons. The number of the latter collisions would be 0.7 of the number of collisions at the axis. The paper is entirely theoretical. There are 6 references, 4 of which are Soviet, 1 Norwegian and 1 translation.

SUBMITTED: July 23, 1968

Card 2/2

FABRIKANT, V. A.

21 (0), 24 (0)	PHASE I BOOK EXPLORATION	30
Akademii nauk SSSR. Fizicheskii Institut		
Izledovaniya po eksperimental'noy i teoreticheskoj fizike: (borni: [Studies on Experimental and Theoretical Physics: Collection of Articles]) Moscow, Izd-vo AN SSSR, 1959. 304 p. Errata slip inserted. 2,300 copies printed.		
Ed.: I. L. Fabelinskiy, Doctor of Physical and Mathematical Sciences; Eds. of Publishing House: A. L. Chernyak and V. G. Berkaut. Tech. Ed.: P. V. Rylina; Commission for Publishing the Text In Memory of G. S. Landsberg: M. A. Leontovich, Academician; (Chairman); Academician; M. A. Leontovich, Academician; S. P. Mandel'shtam, Doctor of Physical and Mathematical Sciences; I. L. Fabelinskiy, Doctor of Physical and Mathematical Sciences; P. S. Landsberg-Baryshnaya, Candidate of Physical and Mathematical Sciences; and G. P. Molodtsov (Secretary). Candidate of Physical and Mathematical Sciences.		
PURPOSE: This book is intended for physicists and researchers engaged in the study of electromagnetic radiation and their role in investigating the structure and composition of materials.		
CONTENTS: The collection contains 30 articles which review investigations in nuclear physics, optics, molecular optics, conductor physics, and other branches of physics. The introductory chapter gives a biographical profile of G. S. Landsberg. Professor and Head of the Department of Optics of the Division of Physical Technology, Institute of Optics, and reviews his work in Maybach No personalities are mentioned. References accompany each article.		
27	Berkaut, V. A., V. I. Mal'nev, and M. M. Subchinskiy. The Work of G. S. Landsberg in the Field of Molecular Spectroscopy	27
43	Thompson, J. and A. H. Kogelnik. Investigation of Resonance Processes in an Activated Discharge Generator Operating Under Conditions of Low Arc Currents	43
53	Aleksandrov, V. I., Kh. Ye. Sterin, A. L. Liberman, I. R. Kurnetova, A. I. Tyun'kin, and B. A. Kiselevskiy. The Possibility of Establishing the Configuration of Stereoisomeric Display of Helium on the Basis of a Combined Scattering Spectrum	53
56	Andreyev, M. N. Standing Sound Waves of Large Amplitude	56
63	Berkaut, V. A. and V. A. Fabrikant. A Medium with Negative Absorption Coefficient	63
71	Vladimirov, V. V. Nuclear Transitions in Monospherical Nuclei	71
80	Volkman, M. V. Optical Properties of Substances in the Vitreous State	80
95	Vul, E. M., V. S. Vasilov, and A. P. Shotov. The Question of Impact Ionization in Semiconductors	95
100	Vul'fson, E. S. New Methods of Increasing the Effectiveness of Radiation Thermocouples	100
104	Ginsburg, V. L., and A. P. Leyanuk. Scattering of Light Near Points of Phase Transition of the Second Type and the Critical Curie Point	104
117	Isaevich, M. A. Irradiation of an Elastic Wall Vibrating Under the Action of Statistically Distributed Forces	117
121	Levin, L. M. The Dimming of Light by a Cloud	121
126	Maring, M. A., S. L. Mandel'shtam, and V. O. Koloshnikov. The Broadening and Shifting of the Spectral Lines of a Gas Discharge in Plasma	126
131	Malyshov, V. I., and V. M. Murzin. Investigation of the Hydrogen Bond in Substances Whose Molecules Contain Two Hydroxyl Groups	131

PUTILOV, Konstantin Anatol'yevich; FABRIKANT, Valentin Aleksandrovich;
ZHABOTINSKIY, Ye.Ye., red.; KUZNETSOVA, Ye.B., red.; KRYUCHKOVA,
V.N., tekhn.red.

[Course in physics] Kurs fiziki. Moskva, Gos.izd-vo fiziko-matem.
lit-ry. Vol.3. [Optics, atomic physics, nuclear physics] Optika,
atomnaya fizika, yadernaya fizika. 1960. 634 p. (MIRA 14:1)
(Physics)

S/096/60/000/010/016/022

E194/E135

114100

AUTHORS: Shpil'rayn, E.E., Fabrikant, V.A., Fedorova, I.P.,
Rumyantsev, A.M., and Detlaf, A.A.

TITLE: Calculation of the Specific Heat of Alkaline Metal Vapours ✓

PERIODICAL: Teploenergetika, 1960, No 10, p 95

TEXT: Calculated values are given for the specific heat at constant pressure of vapours of alkaline metals and the thermodynamic functions are calculated. (Enthalpy, isobar-isothermal potential) of monoatomic and biatomic vapours in the temperature range 500 to 3500 °K for the ideal gas conditions. In determining the specific heat of monoatomic and biatomic vapours only the lower electronic level was taken into account; in calculating the static sums of biatomic vapour molecular oscillations and flexibility were allowed for. On this basis calculations were made of the constants of equilibrium and degree of dissociation of biatomic vapours of alkali metals as functions of temperature and pressure. In addition, the calculations were made in the above mentioned

Card 1/2

✓B.

S/096/60/000/010/016/022

E194/E135

Calculation of the Specific Heat of Alkaline Metal Vapours
temperature range of the specific heat of a reacting mixture of
monoatomic and biatomic vapours both on the saturation line and
in the superheated vapour region.

ASSOCIATION: Moskovskiy energeticheskiy institut
(Moscow Power Institute)

Card 2/2

✓B

FABRIKANT, V.A.

"Optical pyrometry of plasmas" edited by M.M.Sobolev. Reviewed
by V.A.Fabrikant. Usp.fiz.nauk 71 no.4:688-689 Ag '60.
(MIRA 13:8)

(Plasma (Ionized gases))
(Pyrometry)

FABRIKANT, Valentin Aleksandrovich, prof., doktor fiziko-matem. nauk; CHERENKOV, Pavel Alekseyevich, prof., doktor fiziko-matem. nauk, laureat Nobelevskoy premii; GALANIN, Mikhail Dmitriyevich, prof., doktor fiziko-matem. nauk; KUZNETSOV, Ivan Vasil'yevich; TOLSTOY, Nikitja Alekseyevich, prof., doktor fiziko-matem. nauk; VINTER, Aleksandr Vasil'yevich, akademik [deceased]; BARDIN, Ivan Pavlovich, akademik [deceased]; BAZHENOV, A.I., FAYNBOYM, I.B.; red.; RAKITIN, I.T., tekhn. red.

Sergei Ivanovich Vavilov; sbornik. Moskva, Izd-vo "Znanie," 1961. 43 p. (Vsesoyuznoe obshchestvo po rasprostraneniю politicheskikh i nauchnykh znani. Ser.9, Fizika i khimiya, no.10) (MIRA 14:7).

(Vavilov, Sergei Ivanovich, 1891-1951)

FABRIKANT, Valentin Aleksandrovich, prof., doktor fiziko-matem.nauk;
FAYNBOYM, I.B., red.; ATROSHCHENKO, L.Ye., tekhn.red.

[A beam into space] Luch idet v kosmos. Moskva, Izd-vo "Znanie,"
1961. 28 p. (Vsesoiuznoe obshchestvo po rasprostraneniю politi-
cheskikh i nauchnykh znaniy. Ser.9, Fizika i khimiya, no.8)
(MIRA 14:7)

(Particles (Nuclear physics)) (Photons) (Masers)

27197

S/056/61/041/002/019/028
B111/B212

24.2120

AUTHOR: Fabrikant, V. A.

TITLE: Negative absorption coefficients in discharges taking place in gas mixtures

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 2, 1961, 524-527

TEXT: The author examined the conditions for the occurrence of a negative absorption coefficient, taking into account the actual relations between the relevant probabilities, and sets up initial equations for the selective excitation of atoms from the lower level. The final expression obtained is

$$\frac{B_{ab}}{\beta_{k0}} \geq \frac{b_{ik} [\exp((e_i - e_k)/kT_e) + 1/\beta_{k0}] \eta_{ik} - \eta_{k0} - b_{ik}}{1 - b_{ik} (\eta_k^0/\eta_i^0) [\exp(e_i/kT_e) \eta_{ik} - \exp(e_k/kT_e)]} \quad (6),$$

where B_{ab} denotes the probability of collision with atoms or molecules of the admixture; β_{i0} , β_{k0} , β_{ik} denote the probability of electron collisions

Card 1/3

27197

S/056/61/041/002/019/028
B111/B212

Negative absorption coefficients in...

of the second kind; b_{ik} , b_{k0} are practically constant quantities;
 $\eta_{ik} \equiv 1 + A_{ik}/\beta_{ik}$, A_{ik} denotes the probability of spontaneous transitions;
and n denotes the concentration of atoms or molecules. The inequality
 $n_k^b/n_0^b < \exp(-\epsilon_i/kT_e)/b_{ik}$ has to be satisfied here. For selective excitation of atoms from the level ϵ_i an analogous expression is valid:

$$\frac{B_{ba}}{\beta_{i0}} \geq \frac{(b_{ik}/b_{k0})[\eta_{ik}(1+b_{k0}\exp((\epsilon_i-\epsilon_k)/kT_e))-(b_{k0}/b_{ik})\eta_{k0}-b_{ik}\exp((\epsilon_i-\epsilon_k)/kT_e)]}{\exp(\epsilon_i/kT_e)[\eta_{k0}-(b_{ik}/b_{k0})[\eta_{ik}-(n_0^b/n_i^b)\exp(-\epsilon_k/kT_e)]} \quad (13).$$

N. G. Basov, O. I. Krokhin (Ref. 1: ZhETF, 39, 1777, 1960), F. Butayeva, V. Fabrikant (Ref. 2: Issledovaniya po eksperimental'noy i teoreticheskoy fizike - Studies in experimental and theoretical physics, Sb. pamyati G. S. Landsberga, izd. AN SSSR, 1959), V. I. Ablekov, E. S. Pesin, I. L. Fabelinskiy (Ref. 3: ZhETF, 39, 812, 1960) are mentioned. There are 1 figure and 7 references: 6 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: Ref. 6: A. Javan, W. R. Bennett, jr., D. R. Herriott, Phys. Rev. Lett., 6, 106, 1961.

Card 2/3

27197

to absorption coefficients in...

S/056/61/041/002/1:
B111/B212

ASSOCIATION: Morkovskiy energeticheskiy institut (Moscow Power
Engineering Institute)

DATE: March 7, 1961

S/048/62/026/00·/005/01P
E125/B104

AUTHOR: Fabrikant, V. A.

TITLE: Bouguer law

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26
no. 1, 1962, 61 - 66

TEXT: Exponential attenuation of light in an absorbing medium (Bouguer's law) is one of the most important optical laws. A survey is given on studies conducted during the past ten years in connection with the Bouguer law. The limits of its applicability are taken into account. The following names are mentioned: Vavilov S. I., (Sobr. soch., 1, 80, 1954); Butayeva F. A., Fabrikant V. A., (Zh. tekhn. fiz., 26, 749 (1956)); Titushina, V. P., Fabrikant V. A. (Optika i spektroskopiya, 5, 2 (1959)); Butayeva F. A., Fabrikant V. A. (Zh. tekhn. fiz., 16, 1127 (1948)); Biberman L. M. (Zh. eksperim. i teor. fiz., 17, 416 (1947)); Veklenko, B. A. (Zh. eksperim. i teor. fiz., 31, 341 (1956)); Prokhorov, A. M. (Zh. eksperim. i teor. fiz., 31, 1685 (1959)); Basov, N. G. (Zh. eksperim. i teor. fiz., 27, 431 (1954), 28, 249 (1955)).

Card 1/2

Bouguer law

S/047/62/026/001/005/018
B 125/B 104

Basov, N. G., Krokhin, O. I. (Zh. eksperim. i teor. fiz., 32, 1777 (1960));
Vavilov, S. I., Levshin, V. L. (Sov. Z. Phys., 35, 932 (1926)); Ablekov,
Pasin, and Fabelinskiy. There are 5 figures and 23 references: 20 Soviet
and 3 non-Soviet. The two references to English-language publications read
as follows: Phelps A., McCourby A., Phys. Rev., 118, 1561 (1960);
Javan A. et al., Phys. Rev. Letters, 6, 106 (1961).

ASSOCIATION: Moskovskiy energeticheskiy institut (Moscow Power
Engineering Institute)

Card 2/2

FABRIKANT, V.A.

Discussion of R.A.Nilender's report. Izv. AN SSSR. Ser. fiz. 26
no.4:538 Ap '62. (MIRA 15:4)
(Electric lamps) (Luminescent substances→Spectra)

FABRIKANT, Valentin Aleksandrovich, doktor fiziko-matem, nauk, prof.

Optics of plasma. Nauka i zhizn' 30 no.6:33-35 Je '63.
(MIRA 16:7)

(Plasma (Ionized gases))

PUTILOV, Konstantin Anatol'yevich, prof.; Prinimali uchastiye:
FABRIKANT, V.A., prof.; IL'YACHENKO, S.M.; ZHABOTINSKIY,
Ye.Ye., red.; MURASHOVA, N.Ya., tekhn. red.

[Physics course] Kurs fiziki. Izd.11. Moskva, Fizmatgiz.
Vol.1. [Mechanics. Acoustics. Molecular physics. Thermo-
dynamics] Mekhanika. Akustika. Molekuliarnaya fizika.
Termodinamika. 1963. 560 p. (MIRA 16:7)
(Physics)

L 61680-65 ENT(1)/EPF(n)-2/ENG(m)/EPA(w)-2 Pz-6/Po-4/Pab-10/Pi-4 IJP(c) WII/AT-
 UR/0051/65/018/004/0562/0570
 533.9

ACCESSION NR: AP5011110

AUTHOR: Uvarov, F. A.; Fabrikant, V. A.

TITLE: Experimental determination of effective probability of photon emission by plasma atoms

SOURCE: Optika i spektroskopiya, v. 18, no. 4, 1965, 562-570

TOPIC TAGS: radiating atom, Rozhdestvenskiy hook method, plasma radiation, discharge column, emission probability

ABSTRACT: The Rozhdestvenskiy hook method was used to measure the distribution of 6^3p_1 radiating atoms relative to the cross section for low-pressure discharge in mercury vapor and in a mixture of mercury vapor and argon, with an aim at checking experimentally the rigorous theory of radiation "entrapment" developed by L. M. Silberman (ZhETF v. 17, 416, 1947) and T. Holstein (Phys. Rev. v. 72, 1212, 1947 and v. 83, 1159, 1951). The discharge tube was similar to that described by A. M. Shukhtin (Opt. i spektr. v. 7, 839, 1960) and others. The power of the 2537 Å resonant emission was measured simultaneously. The experimental procedure is described. The measurement results were used to calculate the effective probability

Cord 1/2

L 61680-65

ACCESSION NR: AP5011110

4

for photon emission from plasma atoms. The addition of argon to the mercury vapor increased the effective photon emission probability by a factor 1.5--2, owing to the additional broadening of the 2537 Å line by collision with the argon atoms. The probability also increases with the current, especially when argon is added, because of the redistribution of the radiating atoms relative to the discharge cross section. "The authors thank F. A. Butayeva, L. M. Biberman, B. A. Veklenko, and K. I. Rozgachev for valuable advice and help with the work." Orig. art. has: 11 figures, 5 formulas, and 3 tables.

ASSOCIATION: None

SUBMITTED: 23Sep64

ENCL: 00

SUB CODE: OP, NP

NR REF SOV: 016

OTHER: 007

Card 2/2

L 64512-65 EPA(s)-2/EPA(w)-2/ENT(1)/EWA(m)-2

ACCESSION NR: AP5012602

UR/0051/65/018/005/0768/0776

533.9

AUTHOR: Uvarov, F. A.; Fabrikant, V. A.

TITLE: On the absolute concentrations of excited atoms in the positive column of a mercury discharge

SOURCE: Optika i spektroskopiya, v. 18, no. 5, 1965, 768-776

TOPIC TAGS: optic transition, light excitation, excited nucleus, electric discharge radiation, gas discharge spectroscopy

ABSTRACT: The purpose of the investigation was to compare the experimentally measured concentrations of excited atoms with the results of calculations based on probe-measurement data for a wide range of discharge conditions. Unlike in earlier papers (Izv. AN SSSR, Ser. fiz. v. 9, 230, 1945 and others), the authors take into account transitions between excited states. The studies were made on low-pressure discharges in mercury vapor and in mixtures of argon with mercury vapor. Measurements of absolute concentrations of excited atoms at the levels $6^3P_0, 1, 2$ are compared with the theoretical data obtained without account of the transitions between excited states. The results show that at pressures lower than $40 \mu \text{ Hg}$ theory gives an underestimate of the concentrations of the radiating atoms and an overestimate of the concentration of the metastable atoms, compared with experiment. A theo-

Card 1/2

L 64512-65

ACCESSION NR: AP5012602

retical calculation which takes into account the transitions between the excited states shows that this discrepancy can be attributed to the predominance of $6^3P_2 \rightarrow 6^3P_1$ transitions over $6^3P_1 \rightarrow 6^3P_2$. When account is taken of the transitions between the excited states, the calculated values of the concentration exceeds the experimental ones. This excess is insignificant at $7 \mu \text{ Hg}$ and increases strongly with pressure. A probable reason for this discrepancy is a shortage of fast electrons, brought about by inelastic collisions. Orig. art. has: 2 figures, 10 formulas, and 4 tables.

ASSOCIATION: none

SUB CODE: OP

SUBMITTED: 18Feb64

ENCL: 00

NR REF SOV: 016

OTHER: 003

Card 2/2

L 61136-65 EPT(c)/EPT(n)-2/EPA(s)-2/DT(m)/EP(t)/EP(t) TJP(c) WH/JD/JG
ACCESSION NR: AP5016166 UR/0051/65/018/006/0954/0965
537.523/.527

AUTHOR: Uvarov, F. A.; Fabrikant, V. A.

TITLE: Cross sectional distribution of excited atoms in a low-pressure discharge in mercury vapor and in a mixture of mercury vapor and argon

SOURCE: Optika i spektroskopiya, v. 18, no. 6, 1965, 954-965

TOPIC TAGS: gas discharge plasma, excited state, particle distribution, mercury, argon, plasma physics

ABSTRACT: The Rozhdestvenskiy anomalous dispersion (hook) method is used for studying the distribution of excited atoms in the cross section of a low-pressure discharge in mercury vapor and in a mixture of mercury vapor and argon. Experimental results are compared with theoretical data which take account of transitions between excited states. It was found that the distribution of radiating atoms agrees with the exact theory of L. M. Biberman and B. A. Veklenko (Mater. Soveshch. po spektroskopii, t. II, str. 99, Izd. L'vovsk. univ., 1958). This indicates that transitions between excited states have only a slight effect on distribution due to the strong, smoothing effect

Card 1/2

L 64136-65

ACCESSION NR: AP5016166

of diffusion in resonance radiation. On the other hand, the distribution of meta-
stable atoms is sharpened considerably by $6^3P_1 + 6^3P_2$ transitions, especially in the
mercury + argon discharge. In spite of qualitative agreement between experiment and
theory, there are quantitative discrepancies for the mercury + argon discharge. It
is possible that the cause of these discrepancies may be underestimation of the ef-
fective cross sections for $6^3P_1 + 6^3P_2$ processes and radial nonuniformity of the tem-
perature and gas composition in the discharge column. Orig. art. has: 5 figures,
3 tables, and 10 formulas. [14]

ASSOCIATION: none

SUB CODE: ME

SUBMITTED: 18Feb64

ENCL: 00

ATD PRESS: 4470

NO REF SOV: 016

OTHER: 005

Card 2/2

UVAROV, F.A.; FABRIKANT, V.A.

Distribution of excited atoms throughout the cross section
of a low pressure discharge in mercury and mercury-argon
vapors. Opt. i spektr. 18 no.6:964-965 Js '65.

(MIRA 18:12)

FABRIKANT, Valeriy Isaakovich, assistant; STRADOMSKIY, Yuriy Iosifovich,
INZH.

Study of a network for the simultaneous stoppage of the motors
of a multiple-motor d.c. drive. Izv. vys. ucheb. zav.;
elektromekh. 6 no.9:1108-1112 '63. (MIRA 16:12)

1. Ivanovskiy energeticheskiy institut (for Fabrikant).
2. Yaroslavskiy elektromashinostroitel'nyy zavod (for Stradomskiy).

FABRIKANT, Valeryiy Isaakovich, assistant

Calculation of transient processes of multiple-motor d.c. drives.
Izv.vys.ucheb.sav.; elektromekh 8 no.9:961-965 '65.

(MIRA 18:10)

1. Kafedra elektrooborudovaniya promyshlennykh predpriyatiy
Ivanovskogo energeticheskogo instituta.

VOSTROKNUTOV, Nikolay Nikolayevich; DOROGUNTSEV, Viktor Gavrilovich;
MARANCHAK, Vadiliy Makarovich; OVCHARENKO, Nikolay Il'ich;
SIROTINSKIY, Yevgeniy Leonidovich; FABRIKANT, Veniamin
L'vovich; IVANOV, V.I., prof., retsensent; GIZIL, Ye.P.,
dots., retsensent; SIROTKO, V.K., kand. tekhn. nauk, retsensent;
SOLOV'YEV, I.I., prof., red.; FEDOSEYEV, A.M., prof., red.;
OVSYANNIKOVA, Z.G., red.; GOROKHOVA, S.S., tekhn.red.

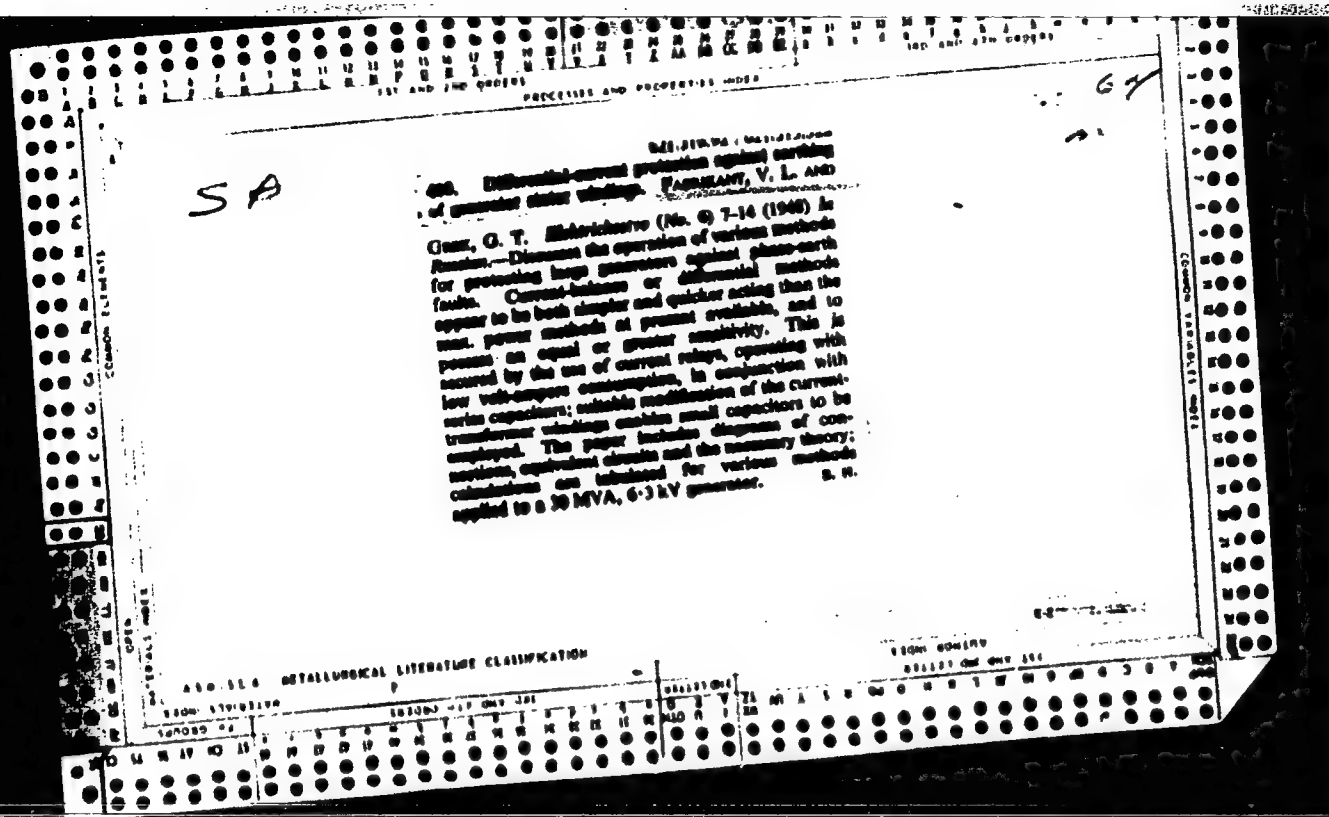
[Use of transistors in relay protection and system automation]Primenenie poluprovodnikov v ustroystvakh releinoi zashchity i sistemnoi avtomatiki. Moskva, Vysshaya shkola, 1962. 282 p. (MIRA 16:3)

(Electric protection) (Electric relays)
(Transistor circuits)

FABRIKANT, V. L.

"The use of symmetrical components for calculating three-phase electrical circuits", by Candidate of Technical Sciences V. L. Fabrikant, at the Power Engr. Inst. im KRZHIZHANOVSKIY of the Acad. Sce. USSR.

SO: Elektrichestvo, No 5, Moscow, May 1947 (U-5533)



FABRIKANT, V. L.

941552

Fil'try simmetrichnykh sostavlyayushchikh. Moscow, 1950.
(Filters of Symmetrical Components)

Manual for engineers and electricians working on electrical relays with basic relations and parameters of filters for relay protection. Filter indexes are given and various filters are compared; published as a Govt. Edition of Energetics.

15

QC661.F3

168T86

FABRIKANT, V.

USSR/Physics - Vacuum
New Techniques

Aug 50

"Review of K. I. Krylov's Book, 'The Physical Bases
of Electrovacuum Techniques,'" V. Fabrikant

"Uspekhi Fiz Nauk" Vol XLI No 4, pp 563-565

Subject book (published 1949, Gostehizdat, 333 pp),
represents digest of course of lectures read at Len-
ingrad Electrotech Inst imeni Lenin, and is intended
to be a textbook for higher schools. Book is in two
parts: kinetic theory of gases, and electrical phe-
nomenon.

168T86

FABRIKANT, V. L., DOCENT

PA 196T26

USSR/Electricity - Relay Protection Aug 51
Transformers, Instrument

"Determination of the Optimum Parameters for
Fast-Saturation Current Transformers Used in
Relay Protection," Docent V. L. Fabrikant,
G. T. Grek, Engr, Moscow

"Elektrichestvo" No 8, pp 30-37

Gives method of detg the optimum parameters of
fast-satn current transformers used in protective
relaying by tests with dc magnetization. Deter-
mines optimum parameters for transformer steel,
high-permeability cold-rolled steel, and permalloy.
Submitted 20 Jan 51. 196T26

FABRIKANT, V. L.

USSR/Electricity - Protective Relaying Apr 52
Delay Circuits

"Alternating-Current Delay Circuits," Docent V. L. Fabrikant, Cand Tech Sci, Teploelektrouyekt

"Elektrichestvo" No 4, pp 54-58

PA 228156
Shows that the current vector in an element of a delay circuit undergoes a sudden change at the beginning of the process and then changes smoothly to its steady-state value. Discusses the dependence of the initial sudden change upon the circuit

228156

Parameters. Gives an operator expression for the impedance, which can be used to design a circuit with assigned parameters. Submitted 21 Feb 51.

228156